

Amendments to the Claims

1. (currently amended) A method for referencing or registering a patient or a patient body part in a camera-assisted, medical navigation system comprising the following steps:

manually manipulating a light beamer so as to scan a light beam produced thereby across a surface of the body part to sequentially produce a plurality of light marks on the surface of the body part;

using a plurality of cameras to detect the light marks on the surface of the body part;

determining three-dimensional spatial positions for respective light marks; and
referencing or registering the body part based on the three dimensional spatial positions of light marks

~~the patient body part to be referenced is brought into the detecting range of a navigation system assisted by at least two cameras, this navigation system detecting with computer support the three-dimensional, spatial positions of light marks,~~

~~light marks are generated on the surface of the part of the body to be referenced by means of a light beam, the three-dimensional position of the light marks being determined by the camera-assisted navigation system,~~

~~the three-dimensional position of the surface of the part of the body to be referenced is determined by means of the positional data for the light marks.~~

2. (currently amended) The method as set forth in claim 1, wherein the spatial position of said surface step of referencing or registering the body part includes assigning is assigned to a set of image data, previously produced by an imaging technique[[],] for said body part, to the referenced or registered body part of the body concerned, especially a CT, MRI (magnetic nuclear resonance tomograph), PET, SPECT, x-ray or ultrasound scan data set to update reference said image data of this data set.

3. (currently amended) The method as set forth in claim 1, wherein ~~said light beam is the plurality of light marks are produced by a beam of invisible light, in particular infrared light, said cameras being set to detect the reflections for this light.~~
4. (original) The method as set forth in claim 3, wherein said light beam is a laser light beam.
5. (currently amended) The method as set forth in claim 3, wherein ~~a visible light reflection is created on said surface~~ by means of a second beam of visible light, aimed substantially at the same target area as that of said invisible referencing light beam, ~~a visible light reflection is created on said surface.~~
6. (original) The method as set forth in claim 5, wherein said second light beam is a visible laser beam.
7. (currently amended) The method as set forth in claim 6, wherein ~~said two light beams are generated by two juxtaposed or nested light sources located juxtaposed or nested.~~
8. (currently amended) The method as set forth in claim 1, wherein ~~several light marks are generated in sequence on said surface by said referencing light beam, while the position positions of said generated the light marks are continuously detected and determined is detected all the time, i.e. in particular until a sufficient number of positional data is obtained for registering the body part determining said spatial position has have been acquired.~~
9. (currently amended) A method for referencing or registering a patient or a patient body part in a camera-assisted, medical navigation system comprising the following steps:

the patient body part to be referenced is brought into the detecting range of a navigation system assisted by at least two cameras, this navigation system detecting with computer support the three-dimensional, spatial positions of light marks,

light marks are generated on the surface of the part of the body to be referenced by means of a light beam, the three-dimensional position of the light marks being determined by the camera-assisted navigation system,

the three-dimensional position of the surface of the part of the body to be referenced is determined by means of the positional data for the light marks ~~The method as set forth in claim 1,~~

wherein either the camera arrangement or said body part to be referenced is moved during referencing so that camera shades are eliminated, a relative movement of said body part being tracked in said navigation system by means of a marker array fixedly positioned relative to said body part.

10. (currently amended) A system ~~An apparatus~~ for referencing or registering a patient or patient body part ~~in a medical navigation system, comprising:~~

a manually manipulated light beamer for producing at least one light beam that can be scanned over the surface of the body part to produce a plurality of sequential light marks on the surface of the body part;

a plurality of cameras that detect the light marks and provide positional data related to respective locations of the light marks; and

a processor operatively coupled to the plurality of cameras for receiving the positional data from the cameras and executing program code

to determine a three-dimensional position in space for respective light marks, and

to reference or register the body part based on the three dimensional position of the light marks

~~including a medical navigation system assisted by at least two cameras, which detects with computer support the three-dimensional, spatial positions of light marks in a detection area, and means for generating said light marks on the surface of said body part to be referenced, the three-dimensional, spatial position of said light marks being determined by said camera-assisted navigation system, wherein said means for generating said light marks is a light beamer producing light reflections on said surface as light marks.~~

11. (currently amended) The apparatus as set forth in claim 10, wherein said light beamer is a beamer for produces a beam of invisible light, in particular infrared light, ~~said cameras being set to capture the reflections of said light.~~

12. (currently amended) The apparatus as set forth in claim 11, wherein said light beamer is includes a laser light beamer.

13. (currently amended) The apparatus as set forth in claim 11, wherein said light beamer beams produces a second beam of visible light [.] aimed substantially at said same target area as that of said invisible referencing light beam, whereby a visible light reflection being can be generated in addition on said surface.

14. (currently amended) The apparatus as set forth in claim 13, wherein said second light beamer is a includes a visible light beamer for visible laser light.

15. (previously presented) The apparatus as set forth in claim 13, wherein the light sources for said beams are unified into a single light source or are two juxtaposed or two nested light sources.

16. (currently amended) A method for referencing or registering a patient or a patient body part in a camera-assisted, medical navigation system comprising the following steps:

the patient body part to be referenced is brought into the detecting range of a navigation system assisted by at least two cameras, this navigation system detecting with computer support the three-dimensional, spatial positions of light marks,

light marks are generated on the surface of the part of the body to be referenced by means of a light beam, the three-dimensional position of the light marks being determined by the camera-assisted navigation system,

the three-dimensional position of the surface of the part of the body to be referenced is determined by means of the positional data for the light marks The apparatus as set forth in claim 10,

wherein relative movement between said body part to be referenced and said camera arrangement is tracked to eliminate camera shades during referencing it comprises through use of a marker array [.] fixedly positioned relative to said body part ; by means of which a relative movement between said body part to be referenced and said camera arrangement is tracked to eliminate camera shades during referencing.

17. (new) The method as set forth in claim 2, wherein the image data includes at least one of CT, MRI, PET, SPECT, X-ray and ultrasound scan data.

18. (new) The method as set forth in claim 3, wherein the invisible light is infrared light.

19. (new) The apparatus as set forth in claim 11, wherein the invisible light is infrared light.